

## PATENT ABSTRACTS OF JAPAN

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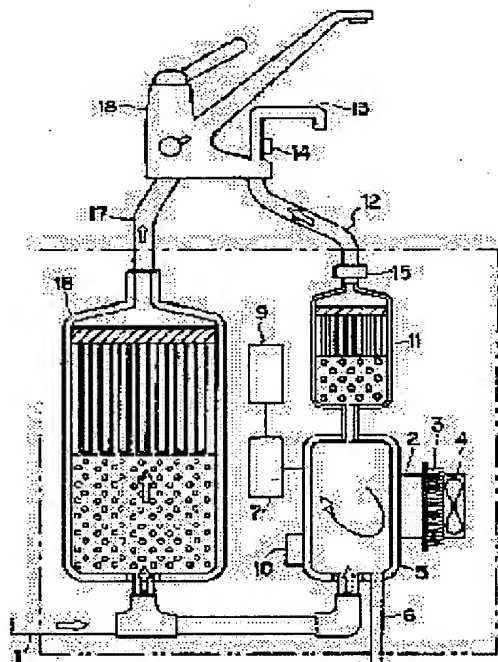
## (54) WATER PURIFIER FITTED WITH COOLING FUNCTION

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To obtain only cooled purified water, or both of cooled purified water and purified water of the normal temp. at the same time by providing an electronic cooling mechanism cooling stored raw water of the normal water, a filter mechanism purifying cooled raw water and a cooled purified water-ejecting cock.

**SOLUTION:** Raw water 1 of the normal temp. supplied from a tap water port is stored in a raw water storage container 5 by opening a cooled purified water emitting solenoid valve 15 to be cooled in a stored state by an electronic cooler 2. The cooled raw water is subsequently purified by a cooled raw water filtering part 11 to become cooled purified water which is, in turn, emitted from a cooled purified water ejecting cock 13 through a supply pipeline 12. The raw water 1 of the normal temp. is purified by a normal temp. raw water filter part 16 by opening a normal temp. purified water emitting cock 18 to become purified water of the normal temp. and this purified water is ejected from the normal temp. purified water ejecting cock 18 through a water supply pipeline 17.

These filter parts 11, 16 are packed with activated carbon and hollow yarn membranes and the bleaching powder smell or fungal smell of the raw water passed through the filter parts 11, 16 is removed by activated carbon and various bacteria or red rust thereof are removed by hollow yarn membranes to purify raw water.



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CLAIMS

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[Claim(s)]

[Claim 1] A water purifier with a cooling function characterized by having a thermoelectric-cooling device which cools raw water of ordinary temperature which stored water, a filter style which purifies cooling raw water, a feed pipe way of cooling water purification, and a discharged water plug of cooling water purification.

[Claim 2] A water purifier [ equipped with a filter style which purifies raw water of ordinary temperature, a feed pipe way of ordinary temperature water purification, and a discharged water plug of ordinary temperature water purification ] with a cooling function according to claim 1.

[Claim 3] A water purifier with a cooling function according to claim 1 or 2 which was equipped with a means to detect access of a user near the discharged water plug of cooling water purification, and equipped a feed pipe way of cooling water purification with a valve which opens and closes a duct by detecting signal.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the water purifier with a cooling function which obtains the delicious water purification cooled from raw water, such as tap water.

[0002]

[Description of the Prior Art] Although the thing of the purification mechanism of a type which removes the bleaching powder smell which has filtration membranes, such as adsorbents, such as activated carbon, and a hollow fiber, builds in a cartridge and the made filter style as a conventional common water purifier, and is contained in tap water, a mold odor, saprophytic bacteria, rust, etc. has spread The method of a water purifier for home use putting water purification into a container, in order to obtain the water purification with which that to which the cooling function is not attached is most, and it was cooled, and cooling the surroundings on ice, or cooling in a refrigerator etc., or putting ice into water purification and cooling is used. Moreover, as business-use water purifiers, such as a restaurant, water is supplied to a reservoir in tap water and there is a thing equipped with the cooler style of water, such as a compressor and a condenser.

[0003] However, although the water purifier equipped with this cooler style carries out the discharged water of the same cooling water also in which uses, such as potable water and cooking water, and it has high feed water capacity In order to use compressors, such as a compressor, as cooling system general in case the cooling water of a constant rate is obtained, in order to obtain the refrigeration capacity which needs the container which stores water in the raw water of the capacity, and cools the raw water of the amount further, the case was large-sized, and the installation to ordinary homes was difficult. Moreover, when carrying out the discharged water of the cooling water purification, the discharged water of ordinary temperature water purification had to be switched, and cooling water purification and ordinary temperature water purification could not be obtained simultaneously, but there was a problem of being user-unfriendly. [0004]

[Problem(s) to be Solved by the Invention] The object of this invention is to offer the water purifier with a cooling function which can obtain simultaneously cooling water purification and ordinary temperature water purification independently [ water purification / cooling ].

[0005]

[Means for Solving the Problem] This invention is in a water purifier with a cooling function characterized by having a filter style which is equipped with a thermoelectric-cooling device which cools raw water of ordinary temperature which stored water, a filter style which purifies cooling raw water, a feed pipe way of cooling water purification, and a discharged water plug of cooling water purification, or purifies raw water of ordinary temperature further, a feed pipe way of ordinary temperature water purification, and a discharged water plug of ordinary temperature water purification.

[0006]

[Embodiment of the Invention] Hereafter, the example which shows the configuration of this invention to a drawing explains. Drawing 1 , drawing 3 , and drawing 4 are the block diagrams of the example of the water purifier with a cooling function of this invention. In raw water and 2, an electronic cooler and 3 a blower and 5 for a radiator and 4 among each drawing A raw water reservoir, [ one ] In a drain pipe and 7, a control section and 9 a thermometric element and 11 for an actuation display and 10 The cooling raw water filtration section, [ 6 ] 12 -- the feed pipe way of cooling water purification,

and 13 — a cooling water purification discharged water plug and 14 — the detector of user access, and 15 — in a cooling water purification discharged water solenoid valve and 16, the ordinary temperature raw water filtration section and 17 show the feed pipe way of ordinary temperature water purification, and, as for an ordinary temperature water purification discharged water plug and 19a, 18 shows an outlet side passage change-over valve, as for an entrance-side passage change-over valve and 19b.

[0007] In drawing 1, into the case surrounded and shown according to the two-dot chain line, the electronic cooler 2 which used the Peltier device as a thermoelectric-cooling device touches the raw water reservoir 5, and receipt arrangement of the cooling raw water filtration section 11 is carried out as a filter style of cooling raw water, respectively. Moreover, in the case, the ordinary temperature raw water filtration section 16 is contained as a filter style of ordinary temperature raw water. an electronic cooler 2 — the side-attachment-wall side of the raw water reservoir 5 — cooling — fitness — it needs — it sticks, and it is installed and the raw water which stored water to the raw water reservoir 5 is cooled. Moreover, he is trying to emit the heat which attaches a radiator 3 in the heating surface of objection of an electronic cooler 2, and is generated out of a case with a blower 4. In addition to this, an axial fan and the equipment of heat which can be emitted are suitably used for this blower 4. Heat insulation of the fields other than the electronic cooler 2 installation section of the raw water reservoir 5 is carried out with the heat insulator.

[0008] The system way which cools, purifies and carries out the discharged water of the raw water of ordinary temperature is controlled by the cooling water purification discharged water solenoid valve 15. By opening the cooling water purification discharged water solenoid valve 15, water is supplied to the raw water 1 of the tap water of the ordinary temperature to which water is supplied from waterworks opening with the water pressure of tap water, it stores water to the raw water reservoir 5, and is cooled with an electronic cooler 2 in the state of storage of water. Subsequently cooling raw water is purified in the cooling raw water filtration section 11, and turns into cooling water purification, and the discharged water of the cooling water purification is carried out from the cooling water purification discharged water plug 13 through the feed pipe way 12. When a storage-of-water condition continues for a long period of time, in order not to make the raw water reservoir 5 interior generate saprophytic bacteria, the drain pipe 6 of a scupper is formed in the raw water reservoir 5.

[0009] Moreover, the system way which purifies and carries out the discharged water of the raw water of ordinary temperature is controlled by the ordinary temperature water purification discharged water plug 18. By opening the ordinary temperature water purification discharged water plug 18, as for the raw water 1 of the tap water of the ordinary temperature to which water is supplied from waterworks opening, water is supplied with the water pressure of tap water, and it is purified in the ordinary temperature raw water filtration section 16, and becomes ordinary temperature water purification, and the discharged water of the ordinary temperature water purification is carried out from the ordinary temperature water purification discharged water plug 18 through the feed pipe way 17. Besides the system way which purifies and carries out the discharged water of the raw water of this ordinary temperature, the system way which carries out the discharged water of the raw water warmed further suitably is added.

[0010] A bleaching powder smell and a mold odor are removed by activated carbon, further, saprophytic bacteria, rust, etc. are removed and the raw water which activated carbon and a hollow fiber are built in the cooling raw water filtration section 11 and the ordinary temperature raw water filtration section 16, respectively, and passes the filtration section is purified by the hollow fiber. In addition, the cooling raw water filtration section 11 can be made smaller [ than the amount of cooling water purification used is generally about 1 - 30 percent of the amount of ordinary temperature water purification used few compared with the amount of ordinary temperature water purification used ] than the ordinary temperature raw water filtration section 16.

[0011] Drawing 2 is the block diagram of the control circuit in the system way which cools, purifies and carries out the discharged water of the raw water of the ordinary temperature of the water purifier with a cooling function of this invention. In drawing 2, a commercial alternating current power supply is led to a control section 7, and electric power is supplied [ power supply / the ] in direct current voltage from an after [ pressure lowering ] alternating current, and a direct-current conversion circuit. The actuation display 9 is connected to a control section 7, and the display output of conditions of operation, such as ON OFF of a power supply, a switch of cooling, temperature, and abnormalities, is performed by the actuation display 9. Moreover, by the signal from the thermometric element 9 which detects the water temperature inside the raw water reservoir 5, data processing of

the controlled variable for making setting-out water temperature reach by the control section 7 is carried out, the control output of the voltage polarity and the voltage value which are impressed to an electronic cooler 2 is carried out, and the water temperature inside the raw water reservoir 5 is adjusted.

[0012] Moreover, during cooling actuation, an electronic cooler 2 makes a blower 4 operate, and discharges the heat from a radiator 3 out of a case. It is cooled by the electronic cooler 2 and the whole can make mostly the raw water 1 supplied to the raw water reservoir 5 homogeneity water temperature by the free convection in the interior. The condition of this cooling actuation and subsequent heat insulation actuation is displayed on the actuation display 9, and the discharged water of cooling water purification becomes possible from the condition which shifted to heat insulation actuation from the cooling water purification discharged water plug 13.

[0013] If the user access detector 14 is formed and a user makes a part of hand or body approach the cooling water purification discharged water plug 13 near the front face of the cooling water purification discharged water plug 13, the user access detector 14 will detect, a control output will be carried out from a control section 7 to the cooling water-purification discharged-water solenoid valve 15, and if an aperture and a user keep away from the cooling water purification discharged water plug 13 in the cooling water purification discharged-water solenoid valve 15, the cooling water-purification discharged-water solenoid valve 15 will close by the control from the user access detector 14 and

[0014] In drawing 1, the case with which the thermoelectric-cooling device and the filter style of cooling raw water were contained is arranged under a sink, and the cooling water purification discharged water plug 13 and the ordinary temperature water purification discharged water plug 18 are arranged on a sink. Although unified in the outside case, as shown in drawing 3, the cooling water purification discharged water plug 13 and the ordinary temperature water purification discharged water plug 18 can separate and form the cooling water purification discharged water plug 13 and the ordinary temperature water purification discharged water plug 18, and can also arrange them in the location of the arbitration on a sink.

[0015] In drawing 4, the feed pipe way 12 of cooling water purification of a water purifier with a cooling function and the feed pipe way 17 of ordinary temperature water purification are connected. Entrance-side passage change-over valve 19a and outlet side passage change-over valve 19b are prepared in the gate of the connection section, respectively. Selection of cooling water purification and ordinary temperature water purification is performed by the switch lever of the actuation display 9 or bibcock, a control output is carried out to entrance-side passage change-over valve 19a and outlet side passage change-over valve 19b from a control section 7, and the selection discharged water of cooling water purification and the ordinary temperature water purification is carried out.

[0016] In addition, although the electronic cooler 2 in the water purifier with a cooling function shown in drawing 1, drawing 3, and drawing 4 is used for cooling of raw water, it is the temperature requirement which can let water flow in the cooling raw water filtration section 11, and it can also constitute the control sequence of a control section 7 so that a switch and raw water may be heated for the applied-voltage polarity of an electronic cooler 2 with the voltage polarity reversing switch 8 and heating water purification may be obtained.

[0017] The water purifier with a cooling function of this invention can also be constituted so that only cooling water purification may be obtained, but as illustrated to drawing 1, drawing 3, and drawing 4, it is desirable from the point that constituting so that it may have the filter style which purifies the raw water of ordinary temperature, the feed pipe way of ordinary temperature water purification, and the discharged water plug of ordinary temperature water purification and ordinary temperature water purification may be obtained simultaneously may be suitably carried out according to the use in water purification.

[0018]

[Example] The example of the water purifier with a cooling function of this invention was shown in drawing 1, drawing 3, and drawing 4.

[0019]

[Effect of the Invention] The water purifier with a cooling function of this invention can obtain simultaneously the water purification independently cooled in the cooled delicious water purification, and water purification of ordinary temperature, and can choose and obtain the cooled water purification and water purification of ordinary temperature according to a use. Moreover, since a cooler style is a small thermoelectric-cooling device in which large-sized equipments, such as a compressor, are not used, it is small, and it is user-friendly and it is suitable for the water purifier with

a cooling function of this invention also as home use.

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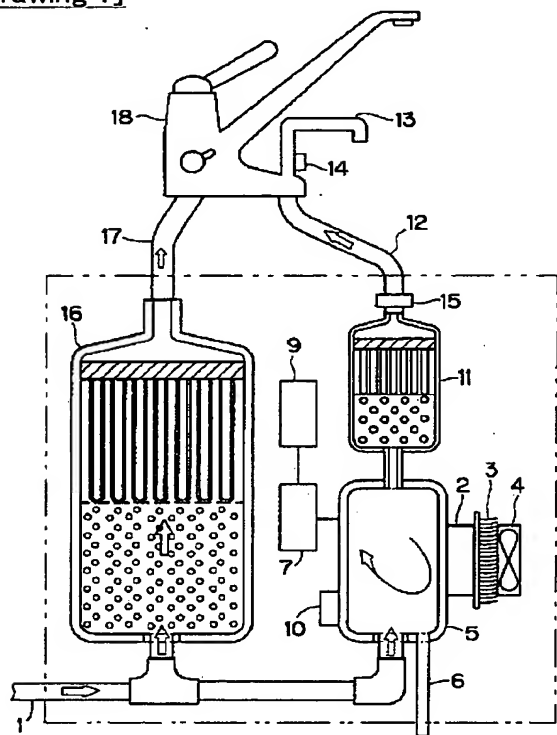
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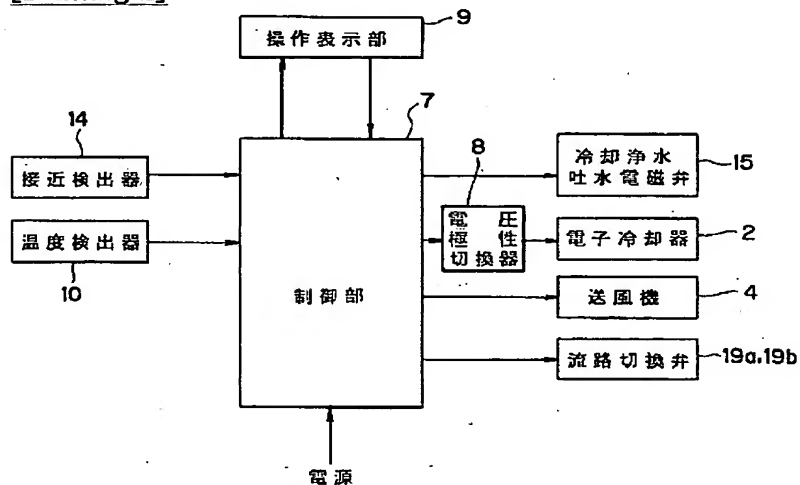
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## DRAWINGS

[Drawing 1]

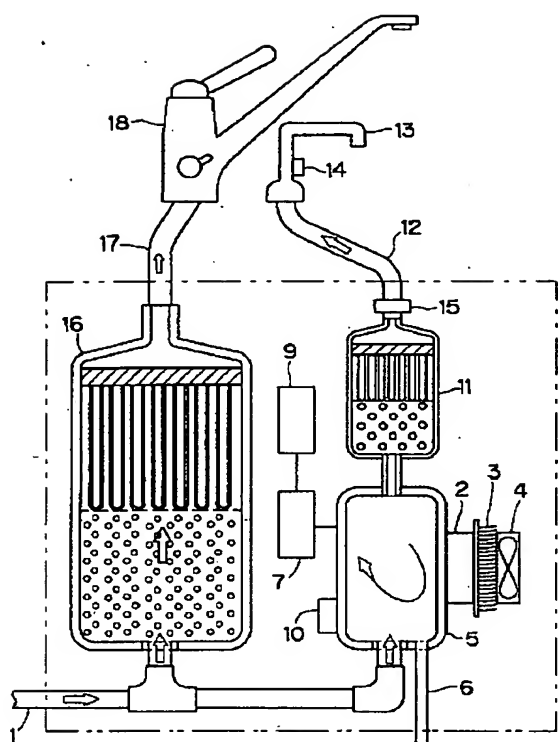


[Drawing 2]

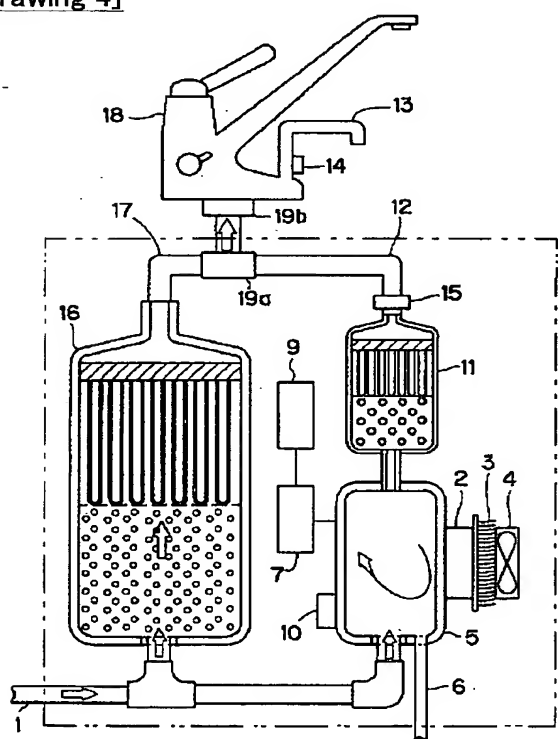


[Drawing 3]





[Drawing 4]



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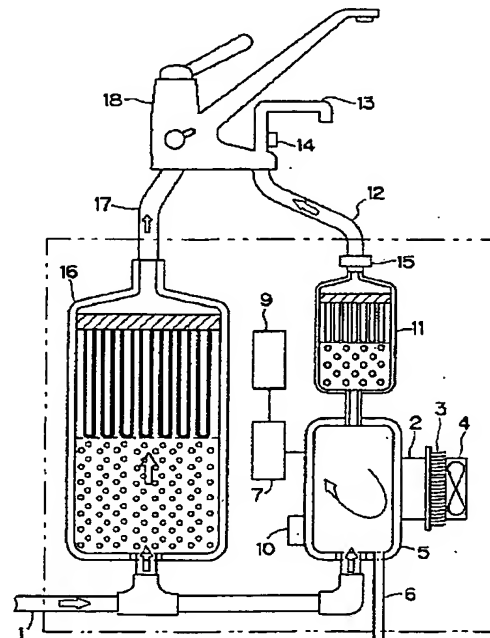
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(54) 【発明の名称】 冷却機能付き浄水器

(57) 【要約】

【課題】 冷却浄水を独立に、或いは冷却浄水と常温浄水を同時に得ることができる冷却機能付き浄水器を提供する。

【解決手段】 貯水された常温の原水を冷却する電子冷却機構、冷却原水を浄化する濾過機構、冷却浄水の給水管路及び冷却浄水の吐水栓を備え、或いはさらに常温の原水を浄化する濾過機構、常温浄水の給水管路及び常温浄水の吐水栓を備える。



## 【特許請求の範囲】

【請求項 1】 貯水された常温の原水を冷却する電子冷却機構、冷却原水を浄化する濾過機構、冷却浄水の給水管路及び冷却浄水の吐水栓を備えたことを特徴とする冷却機能付き浄水器。

【請求項 2】 常温の原水を浄化する濾過機構、常温浄水の給水管路及び常温浄水の吐水栓を備えた請求項 1 記載の冷却機能付き浄水器。

【請求項 3】 冷却浄水の吐水栓の近傍に使用者の接近を検出する手段を備え、検出信号により管路を開閉する弁を冷却浄水の給水管路に備えた請求項 1 または請求項 2 記載の冷却機能付き浄水器。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、水道水等の原水から冷却されたおいしい浄水を得る冷却機能付き浄水器に関する。

## 【0002】

【従来の技術】従来の一般的な浄水器として、活性炭等の吸着剤や中空糸膜等の濾過膜を有しカートリッジとした濾過機構を内蔵し、水道水中に含まれるカルキ臭、カビ臭、雑菌、赤錆等を除去するタイプの浄水機構のものが普及しているが、家庭用の浄水器は冷却機能が付いていないものが殆どで、冷却された浄水を得るには、浄水を容器に入れて周りを水で冷却するか冷蔵庫等で冷却する、或いは浄水に氷を入れて冷却する等の方法が用いられている。また、飲食店等の業務用の浄水器としては、水道水を貯水容器に給水し、圧縮機、凝縮器等の水の冷却機構を備えたものがある。

【0003】しかしながら、この冷却機構を備えた浄水器は、飲料水や料理水等のいずれの用途においても、同一の冷却水を吐水するものであり、高い給水能力を有しているが、一定量の冷却水を得る際、その容量の原水を貯水する容器を必要とし、さらにその量の原水を冷却する冷却能力を得るためには、一般的な冷却方式としてコンプレッサ等の圧縮機を用いるため管体が大型であり、一般家庭への設置は困難であった。また、冷却浄水を吐水させる際に、常温浄水の吐水を切り換えねばならず、冷却浄水と常温浄水を同時に得ることができず、使い勝手が悪いという問題があった。

## 【0004】

【発明が解決しようとする課題】本発明の目的は、冷却浄水を独立に、或いは冷却浄水と常温浄水を同時に得ることができる冷却機能付き浄水器を提供することにある。

## 【0005】

【課題を解決するための手段】本発明は、貯水された常温の原水を冷却する電子冷却機構、冷却原水を浄化する濾過機構、冷却浄水の給水管路及び冷却浄水の吐水栓を備え、またはさらに常温の原水を浄化する濾過機構、常

温浄水の給水管路及び常温浄水の吐水栓を備えたことを特徴とする冷却機能付き浄水器にある。

## 【0006】

【発明の実施の形態】以下、本発明の構成を図面に示す実施例により説明する。図 1、図 3、図 4 は、本発明の冷却機能付き浄水器の例の構成図である。各図中、1 は原水、2 は電子冷却器、3 は放熱器、4 は送風機、5 は原水貯水容器、6 は排水管、7 は制御部、9 は操作表示部、10 は温度検出器、11 は冷却原水濾過部、12 は冷却浄水の給水管路、13 は冷却浄水吐水栓、14 は使用者接近の検出器、15 は冷却浄水吐水電磁弁、16 は常温原水濾過部、17 は常温浄水の給水管路、18 は常温浄水吐水栓、19 a は入口側流路切換弁、19 b は出口側流路切換弁を示す。

【0007】図 1 において、2 点鎖線で囲んで示した管体内に、電子冷却機構としてペルチェ素子を利用した電子冷却器 2 が原水貯水容器 5 に接して、また冷却原水の濾過機構として冷却原水濾過部 11 がそれぞれ収納配設されている。また、管体内には、常温原水の濾過機構として常温原水濾過部 16 が収納されている。電子冷却器 2 は、原水貯水容器 5 の側壁面に冷却が良好なるよう密着して設置され、原水貯水容器 5 に貯水された原水を冷却する。また、電子冷却器 2 の反対の加熱面には、放熱器 3 を取り付け、発生する熱を送風機 4 で管体外に放出するようにしている。この送風機 4 には軸流ファンやその他熱の放出可能な装置が適宜用いられる。原水貯水容器 5 の電子冷却器 2 設置部以外の面は、断熱材で保冷している。

【0008】常温の原水を冷却し、浄化して吐水する系路は、冷却浄水吐水電磁弁 15 により制御される。水道口より給水される常温の水道水の原水 1 は、冷却浄水吐水電磁弁 15 が開かれることにより、水道水の水圧で送水されて原水貯水容器 5 に貯水され、貯水状態で電子冷却器 2 にて冷却される。冷却原水は、次いで冷却原水濾過部 11 で浄化されて冷却浄水となり、冷却浄水は、給水管路 12 を経て冷却浄水吐水栓 13 より吐水される。原水貯水容器 5 には、貯水状態が長期間継続する場合に原水貯水容器 5 内部に雑菌を発生させないために、水抜き排水管 6 を設ける。

【0009】また、常温の原水を浄化し吐水する系路は、常温浄水吐水栓 18 により制御される。水道口より給水される常温の水道水の原水 1 は、常温浄水吐水栓 18 が開かれることにより、水道水の水圧で送水され、常温原水濾過部 16 で浄化されて常温浄水となり、常温浄水は、給水管路 17 を経て常温浄水吐水栓 18 より吐水される。この常温の原水を浄化し吐水する系路の他に、さらに適宜加温された原水を吐水する系路が付加される。

【0010】冷却原水濾過部 11 及び常温原水濾過部 16 には、活性炭と中空糸膜がそれぞれ内蔵されており、

濾過部を通過する原水は、活性炭によってカルキ臭やカビ臭が除去され、さらに中空糸膜によって雑菌や赤錆等が除去されて浄化される。なお、冷却浄水の使用量は、常温浄水の使用量に比べて一般に少なく常温浄水の使用量の1～3割程度であることより、冷却原水濾過部11は、常温原水濾過部16より小型のものとすることができ

【0011】図2は、本発明の冷却機能付き浄水器の常温の原水を冷却し、浄化して吐水する系路における制御回路のブロック図である。図2において、制御部7には商用交流電源が導かれ、その電源を降圧後交流、直流変換回路から直流電圧を給電する。制御部7には操作表示部9が接続され、操作表示部9で電源の入切、冷却の切り換え、温度、異常等の動作状況の表示出力を行う。また、原水貯水容器5の内部の水温を検出する温度検出器9からの信号によって制御部7で設定水温に到達させるための制御量を演算処理し、電子冷却器2に印加する電圧極性と電圧値を制御出力し、原水貯水容器5の内部の水温が調節される。

【0012】また、電子冷却器2が冷却動作中は送風機4を運転させ、放熱器3からの熱を筐体外へ排出する。原水貯水容器5に供給された原水1は、電子冷却器2によって冷却され、内部での自然対流によって全体がほぼ均一水温にすることができる。この冷却動作とその後の保冷動作の状態は、操作表示部9に表示され、保冷動作に移行した状態から冷却浄水吐水栓13より冷却浄水が吐水可能となる。

【0013】冷却浄水吐水栓13の前面の近傍には、使用者接近検出器14が設けられており、冷却浄水吐水栓13に使用者が手または身体の一部を近接させると、使用者接近検出器14が検出し、制御部7から冷却浄水吐水電磁弁15へ制御出力されて冷却浄水吐水電磁弁15が開き、使用者が冷却浄水吐水栓13から遠ざかると使用者接近検出器14及び制御部7からの制御により冷却浄水吐水電磁弁15が閉じる。

【0014】図1においては、電子冷却機構、冷却原水の濾過機構が収納された筐体は、流し台の下に配置され、冷却浄水吐水栓13と常温浄水吐水栓18は、流し台上に配置される。冷却浄水吐水栓13と常温浄水吐水栓18とは、外ケースで一体化されているが、図3に示したように、冷却浄水吐水栓13と常温浄水吐水栓18とを分離して設け、流し台上の任意の位置に配置することもできる。

【0015】図4においては、冷却機能付き浄水器の冷却浄水の給水管路12と常温浄水の給水管路17とを連結し、連結部の出入口に入口側流路切換弁19a、出口側流路切換弁19bをそれぞれ設け、冷却浄水、常温浄水の選択を操作表示部9または水栓の切り換えレバーで行い、制御部7から入口側流路切換弁19a、出口側流路切換弁19bに制御出力し、冷却浄水、常温浄水を選

択吐水させる。

【0016】なお、図1、図3及び図4に示す冷却機能付き浄水器における電子冷却器2は、原水の冷却に用いられるが、冷却原水濾過部11に通水できる温度範囲で、電子冷却器2の印加電圧極性を電圧極性切換器8にて切り換え、原水を加熱して加熱浄水を得るように制御部7の制御シーケンスを構成することもできる。

【0017】本発明の冷却機能付き浄水器は、冷却浄水のみを得るように構成することもできるが、図1、図3、図4に例示したように、常温の原水を浄化する濾過機構、常温浄水の給水管路及び常温浄水の吐水栓を備えて常温浄水を同時に得るように構成することが浄水をその用途に応じ適宜し得られる点から好ましい。

【0018】

【実施例】本発明の冷却機能付き浄水器の例を図1、図3、図4に示した。

【0019】

【発明の効果】本発明の冷却機能付き浄水器は、冷却されたおいしい浄水を独立に、或いは冷却された浄水と常温の浄水を同時に得ることができるものであり、冷却された浄水と常温の浄水を用途に応じて選択して得ることができる。また、冷却機構がコンプレッサー等の大型の装置を用いない小型の電子冷却機構であるため、本発明の冷却機能付き浄水器は、小型で使い勝手がよく家庭用としても好適なるものである。

【図面の簡単な説明】

【図1】本発明の冷却機能付き浄水器の一例の構成図である。

【図2】本発明の冷却機能付き浄水器の常温の原水を冷却し、浄化して吐水する系路における制御回路のブロック図である。

【図3】本発明の冷却機能付き浄水器の他の例の構成図である。

【図4】本発明の冷却機能付き浄水器の他の例の構成図である。

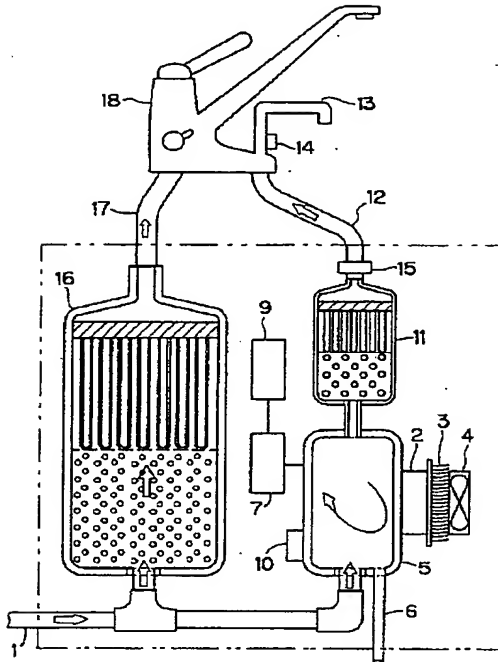
【符号の説明】

- 1 原水
- 2 電子冷却器
- 3 放熱器
- 4 送風機
- 5 原水貯水容器
- 6 排水管
- 7 制御部
- 8 電圧極性切換器
- 9 操作表示部
- 10 温度検出器
- 11 冷却原水濾過部
- 12 冷却浄水の給水管路
- 13 冷却浄水吐水栓
- 14 使用者接近検出器

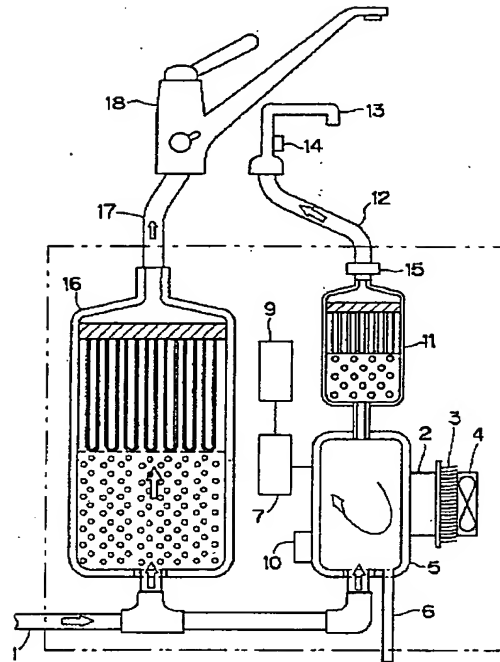
- 15 冷却浄水吐水電磁弁  
16 常温原水濾過部  
17 常温浄水の給水管路

- 18 常温浄水吐水栓  
19a 入口側流路切換弁  
19b 出口側流路切換弁

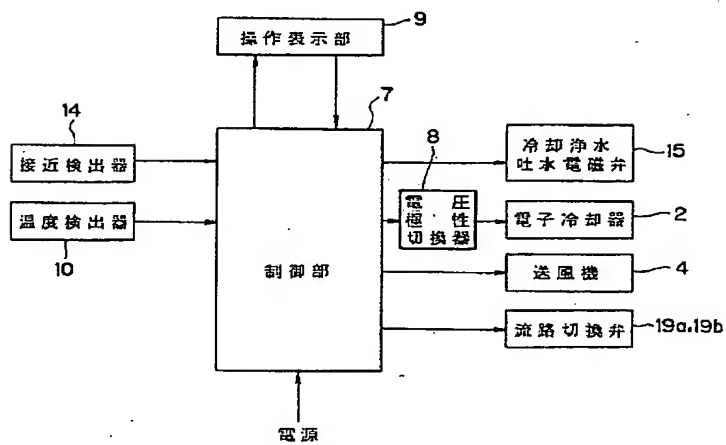
【図1】



【図3】



【図2】



【図 4】

